

Notice of Allowability

Application No.

09/546,981

Applicant(s)

GALLO ET AL.

Examiner

Prieto Beatriz

Art Unit

2142

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 7/02/04.
2. ☒ The allowed claim(s) is/are 1-16.
3. ☒ The drawings filed on 09 July 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 7/29/04
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Beatriz Prieto
Patent Examiner
7/29/04

Examiner's Amendment

1. An Examiner's Amendment to the record appears below. Should the changes or additions be unacceptable to Applicant, an amendment may be filed as provided by 37 C.F.R. § 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the Issue Fee.

2. Pursuant to M.P.E.P. §606.01, this title has respectfully been changed to read as follows:

-- METHOD FOR BRIDGING AND ROUTING DATA FRAMES VIA A NETWORK SWITCH COMPRISING A SPECIAL GUIDED TREE HANDLER PROCESSOR --

3. Pursuant to M.P.E.P. §201, this examiner amendment solely updates application's reference(s) to co-pending related application information.

IN THE SPECIFICATION:

Please substitute the following paragraph on page 1, line 10:

This application is related by common inventorship and subject matter to co-pending application titled "Local MAC address Learning in Layer 2 Frame Forwarding", U.S. Application No. 09/547,369 filed April 11, 2000. This application is assigned to International Business Machines Corporation and is entirely incorporated herein by this reference.

4. Authorization for this examiner's amendment was given in a telephone interview (see attached PTO-413 for details) with Myron Wyche (Reg. No. 47,341) on September 28, 2004, to place application in condition for allowance.

PLEASE AMEND CLAIMS AS FOLLOW:

1. (Currently amended) In a network switch comprising a control point and a plurality of network processors, a method comprising:

(a) receiving data frames from a network; and

(b) performing logical bridging of data frames destined for or originating from said control point in a network processor directly connected to said control point,

managing a media access control (MAC) address database with a Guided Tree Handler, and
sending data frames to a logical router in another network processor with an (Layer 3) L3 table
for all (Layer 3) L3 processing,

wherein said network processor directly connected to said control point further comprising a
logical bridge and the MAC address database and said network processor directly connected to said
control point is free of an L3 table.

2. (Original) The method of claim 1, said step (b) comprising:

(c) determining whether said data frame is destined for said control point; and

(d) sending said data frame to said network processor directly connected to said control point
when said step (c) indicates that said data frame is destined for said control point.

3. (Original) The method of claim 2, said step (c) comprising:

(e) looking up a destination address in said frame in a media access control (MAC) address
database;

(f) sending said data frame to a logical router when said look-up determines that said data frame
requires processing by a logical router;

(g) looking up a destination address in a routing table in said logical router; and

(h) sending said frame to said network processor directly connected to said control point when
said look-up determines that said frame is destined for said control point.

4. (Original) The method of claim 3, further comprising.

setting a bit in a frame header appended to said frame to indicate that said frame is destined for
said control point.

5. (Original) The method of claim 1, said step (b) comprising;

learning a source MAC address in said frame in a MAC address database; and

sending said frame to said control point.

6. (Original) The method of claim 1, said step (b) comprising:

looking up a destination address in a frame originating from said control point in a MAC address
database; and

forwarding said frame to a target network processor and port found in said look-up.

7. (Currently amended) A network switch comprising:

a control point;

a plurality of network processors;

said plurality of network processors programmed with logical bridging and logical routing functions;

wherein a network processor directly connected to said control point performs logical bridging functions needed by said control point, said network processor further comprising a logical bridge and a media access control (MAC) address database, and

wherein said network processor directly connected to said control point manages the MAC address database with a Guided Tree Handler, sends data frames to a logical router in another network processor with and (Layer 3) L3 table for all (Layer 3) L3 processing, and is free of an L3 table.

8. (Original) The network switch of claim 7, wherein said logical bridging and logical routing functions determine that an incoming data frame to one of said plurality of networks processors is destined for said control point and send said data frame to said network processor directly connected to said control point.

9. (Original) The network switch of claim 8, wherein said logical bridging function in said network processor directly connected to said control point learns a source address in said frame in a MAC address database.

10. (Original) The network switch of claim 9, wherein said logical bridging function in said network processor directly connected to said control point receives a frame originating from said control point, looks up said learned source address, and forwards said frame originating from said control point to a target network processor corresponding to said learned source address.

11. (Currently amended) A computer-usable medium storing computer executable instructions, said instructions when executed by processors in a network switch comprising a control point and a plurality of network processors, implementing a method comprising:

(a) receiving data frames from a network; and

(b) performing logical bridging of data frames destined for or originating from said control point in a network processor directly connected to said control point,

managing a media access control (MAC) address database with a Guided Tree Handler, and

sending data frames to a logical router in another network processor with an (Layer 3) L3 table for all (Layer 3) L3 processing,

wherein said network processor directly connected to said control point further comprising a logical bridge and the MAC address database, and said network processor directly connected to said control point is free of an L3 table.

12. (Original) The computer-usable medium of claim 11, said step (b) 2 comprising;

(c) determining whether said data frame is destined for said control point; and

(d) sending said data frame to said network processor directly connected to said control point when said step (c) indicates that said data frame is destined for said control point.

13. (Original) The computer-usable medium of claim 12, said step (c) comprising:

(e) looking up destination address in said frame in a media access control (MAC) address database;

(f) sending said data frame to a logical router when said look-up determines that said data frame requires processing by a logical router;

(g) looking up a destination address in a routing table in said logical router, and

(h) sending said frame to said network processor directly connected to said control point when said look-up determines that said frame is destined for said control point.

14. (Original) The computer-usable medium of claim 13, said method further comprising:

setting a bit in a frame header appended to said frame to indicate that said frame is destined for said control point.

15. (Original) The computer-usable medium of claim 11, said step (b) comprising:

learning a source MAC address in said frame in a MAC address database; and

sending said frame to said control point.

16. (Original) The computer-usable medium of claim 11, said step (b) comprising:

looking up a destination address in a frame originating from said control point in a MAC address database; and

forwarding said frame to a target network processor and port found in said look-up.

Reason for allowance

5. The following is the Examiner's statement of Reason for Allowance. This statement is not intended to necessarily state all the reasons for allowance or all the details why claims are allowed, nor it specifically or impliedly state that all the reasons for allowance are set forth. The primary, or important reason for allowance of the claims is the inclusion of the limitation(s) in all the claims, which is not found in the prior art references.

In this case, the prior art of record teaches the claimed invention substantially as claimed, including network nodes having routing and bridging functionalities performed by supporting processors and databases or tables that support lookup function for determining where/how to bridge ("Layer 2" processing) and route ("Layer 3" processing) corresponding data frames having header/address information, however fails to teach or suggest individually or in combination an improve over the prior art consisting of: managing a database or table with a Guided Tree Handler, as set forth on independent claims 1, and 7, and as further described by invention's disclosure on at least page 6, lines 3-7 and page 4, lines 20-24. Claims are allowed because of the combination of other limitations and the limitation listed above.

6. Claims **1-16** are allowed because of the combinations of other limitations and the limitation listed above.

7. Double patent analysis has been performed with respect to issued patents having common relationship of inventorship and/or ownership with respect to the above-allowed claims, none are found to warrant a double patenting rejection.

8. Any comments Applicants considers necessary must be submitted no later than the payment of the Issue Fee and to avoid processing delays, should preferable accompany the Issue Fees. Such submission should be clearly labeled " Comments on Statement of Reasons for Allowance". In event of any post-allowance papers (e.g. IDS, 312 amendment, petition, etc.), Applicant is exhorted to mail papers to the Production Control branch in Publications or faxed to

post-allowance papers correspondence branch at (703) 308-5864 to expedite issuing process or call PUB's Customer Service if any questions at (703) 305-8497.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Prieto whose telephone number is (703) 305-0750. The Examiner can normally be reached on Monday-Friday from 6:30 to 4:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's Supervisor, Jack B. Harvey can be reached on (703) 305-9705. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800/4700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system, status information for published application may be obtained from either Private or Public PAIR, for unpublished application Private PAIR only (see <http://pair-direct.uspto.gov> or the Electronic Business Center at 866-217-9197 (toll-free)).

Any response to this action should be mailed to:

Box Issue Fee
Commissioner of Patents and Trademarks
Washington, D.C. 20231


or faxed to:

(703) 746-4000, (Issue Fee and any Publication fee/payments)

Or:

(703) 305-8283 (for checking on receipt of payment w/Publication)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Fourth Floor (Receptionist), further ensuring that a receipt is provided stamped "Technology Center 2100".


B. Prieto
Patent Examiner
September 30, 2004